

CURRICULUM VITAE

Charles A. Brock

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EDUCATION:

Ph.D. 1990, Atmospheric Science, University of Washington, USA
B.S. 1985, Atmospheric Sciences, University of California at Davis, USA

EXPERIENCE:

Research Physicist, Chemical Sciences Division, NOAA Earth System Research Laboratory, 2005-Present. Aerosol emission, transformation, and transport in the troposphere and stratosphere; aerosol-climate interactions, development of instruments for measuring aerosol optical and physical properties. Measurements during the TexAQS 2006, ARCPAC 2008, CalNex 2010, DC3 2012, SENEX 2013, SEAC4RS 2013, SONGNEX 2015, ATom, and FIREX-AQ 2020 field programs on NOAA and NASA aircraft. Co-PI of the NOAA ARCPAC 2008 field program.

Research Scientist III, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, 2000-2005.

Research Associate Professor, Department of Mechanical Engineering, University of Denver, 1994-1999

Postdoctoral Research Associate, Department of Mechanical Engineering, University of Denver, 1990-1993

AWARDS AND HONORS:

2012 – Colorado Governor's Award for High-Impact Research

2010 – U.S. Dept. of Commerce Bronze Medal Award

2005 – NOAA Outstanding Publication Award

2003 – NOAA Outstanding Publication Award

PROFESSIONAL SOCIETIES, COMMITTEES, AND BOARDS:

Member of the American Geophysical Union

Member of the NASA Tropospheric Airborne Measurement Evaluation Panel

Chair of the NSF Observing Facilities Assessment Panel

SELECTED PUBLICATIONS:

Brock, C.A., et al., *Aerosol size distributions during the Atmospheric Tomography (ATom) mission: methods, uncertainties, and data products*, Atmospheric Measurement Techniques, 12, 3081-3099, doi:10.5194/amt-12-3081-2019, 2019.

Williamson, C.J., et al., *A large source of cloud condensation nuclei from new particle formation in the tropics*, Nature, 574(7778), 399-403, doi:10.1038/s41586-019-1638-9, 2019.

- Kupc, A., et al., 2018. *Modification, calibration, and performance of the ultra-high sensitivity aerosol spectrometer for particle size distribution and volatility measurements during the Atmospheric Tomography (ATom) airborne campaign*, Atmos. Meas. Tech., doi:10.5194/amt-11-369-2018.
- Brock, C.A., et al., 2016. *Aerosol optical properties in the southeastern United States in summer - Part 1: Hygroscopic growth*, Atmos. Chem. Phys., doi:10.5194/acp-16-4987-2016.
- Brock, C.A., et al., 2016. *Aerosol optical properties in the southeastern United States in summer - Part 2: Sensitivity of aerosol optical depth to relative humidity and aerosol parameters*, Atmos. Chem. Phys., doi:10.5194/acp-16-5009-2016.
- Langridge, J. M., et al., 2012. *Evolution of aerosol properties impacting visibility and direct climate forcing in an ammonia-rich urban environment*, J. Geophys. Res., 117, D00V11.
- Bahreini, R., et al., 2012. *Gasoline emissions dominate over diesel in formation of secondary organic aerosol mass*. Geophys. Res. Lett., 39, L06805.
- Lonsdale, C. R., et al., 2012. *The effect of coal-fired power-plant SO₂ and NO_x control technologies on aerosol nucleation in the source plumes*. Atmos. Chem. Phys., 12, 11519-11531.
- Stevens, R. G., et al., 2012. *Nucleation and growth of sulfate aerosol in coal-fired power plant plumes: sensitivity to background aerosol and meteorology*. Atmos. Chem. Phys., 12, 189-206.
- Lance, S., et al., 2011. *Cloud condensation nuclei as a modulator of ice processes in Arctic mixed-phase clouds*. Atmos. Chem. Phys., 11, 8003-8015.
- Brock, C. A. et al., 2011. *Formation and growth of organic aerosols downwind of the Deepwater Horizon oil spill*. Geophys. Res. Lett., 38, L17805.
- Brock, C. A. et al., 2011. *Characteristics, sources, and transport of aerosols measured in spring 2008 during the aerosol, radiation, and cloud processes affecting Arctic Climate (ARCPAC) Project*. Atmos. Chem. Phys., 11, 2423-2453.
- Brock, C. A. et al., 2008. *Sources of particulate matter in the northeastern United States in summer: 2. Evolution of chemical and microphysical properties*. J. Geophys. Res., 113, D08302.
- de Gouw, J. A., et al., 2008. *Sources of particulate matter in the northeastern United States in summer: 1. Direct emissions and secondary formation of organic matter in urban plumes*. J. Geophys. Res., 113, D08301.
- Brock, C. A. et al., 2004. *Particle characteristics following cloud-modified transport from Asia to North America*. J. Geophys. Res., 109(D23). 10.1029/2003JD004198.
- Brock, C. A. et al., 2003. *Particle growth in urban and industrial plumes in Texas*. J. Geophys. Res., 108(D3).
- Brock, C. A. et al., 2002. *Particle growth in the plumes of coal-fired power plants*. J. Geophys. Res., 107, AAC 9.1-9.14.
- Brock, C. A. et al., 2000. *Ultrafine particle size distributions measured in aircraft exhaust plumes*. J. Geophys. Res., 105, 26,555-26,567.
- Fahey, D. W., et al., 1995. *Emission measurements of the Concorde supersonic aircraft in the lower stratosphere*. Science, 270, 70-74.
- Brock, C. A. et al., 1995. *Particle formation in the upper tropical troposphere: A source of nuclei for the stratospheric aerosol*. Science, 270, 1650-1653.